

COHCu 8: A new pearl millet hybrid for Tamil Nadu

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Abstract : The pearl millet hybrid TNBH 5635 (732 A x PT 4450) was released as COHCu 8 during January 2001 for general cultivation in Tamil Nadu. It recorded a mean grain yield of 2819 kg ha⁻¹ (21.7% over X7) under rainfed conditions and 3682 kg ha⁻¹ (15.0% over X7) under irrigated conditions. It is resistant to downy mildew and possess 5-8 productive tillers with nonlodging and spindle type ear heads. The protein content is about 13.8 per cent with acceptable cooking quality. It can be grown in June - July, September - October and January - February throughout Tamil Nadu and is the best alternative to X7 hybrid.

Key words: Pearl millet, Early duration, Amber colour, Rainfed, Irrigated.

Introduction

Pearl millet (*Pennisetum glaucum* (L) R. Br.) is an important food and fodder crop in India. It is cultivated in an area of 1.86 lakh ha in Tamil Nadu with production of 1.95 kg ha⁻¹ tonnes annually and a productivity of 1184 kg ha⁻¹. The major problem encountered with the pearl millet hybrid is its susceptibility to downy mildew. This poses a bottle neck for increasing the yield and productivity in this crop. To overcome this problem, production of hybrids (Burton, 1958) with different cytoplasmic background (Athwal, 1965) is one of the solutions. Intensive efforts were made to diversify the male sterile sources at Tamil Nadu Agricultural University in the development of a new stable, dwarf and highly tillering male sterile line 732 A (Appadurai *et al.* 1982) with a different cytoplasmic background and resistant to downy mildew. An attempt was made to evolve a high yielding downy mildew resistant hybrid using this male sterile line with proven restorers.

Materials and Methods

Hybrid combinations were made during 1992 summer involving the male sterile line 732 A and homozygous inbred lines selected based on phenotypic superiority with abundance of pollen production. Among these hybrids, one involving 732 A and PT 4450 was found to be promising in Initial hybrid trials. This combination was designated as TNBH 5635 and was evaluated for its performance in station trials for eight years from 1993 to 2000, multilocation trial at nine centres, (1996 - 97), All India trials (1998 - 99) in 13 centres and in adaptive research

trials in 322 locations in farmers holding of different districts of Tamil Nadu from 1997 - 1999.

Results and Discussion

The overall mean yield performance of the hybrid COH Cu 8 in comparison with the ruling hybrids and composites are presented in Table 1. In station trials, it recorded a mean grain yield of 4874 and 3994 kg ha⁻¹ in summer (irrigated) and *kharif* (rainfed) seasons. The increase in yield was 17.6 to 63.2 and 24.3 to 62.4 per cent over X7, Co 7 and WCC 75 in sununer and *kharif* seasons respectively.

During 1996 - 97, the hybrid recorded a mean grain yield increase of 21.3, 36.8 and 39.9 per cent over X7, Co7 and WCC 75 respectively in multilocation trials. A total of 322 adaptive research trials (94 irrigated and 228 rainfed) were conducted with this hybrid and the results revealed that the overall superiority under irrigated was 10.3 per cent and rainfed of 5.8 per cent increase yield over check hybrid X7.

The overall mean performance of the new hybrid revealed that 28.3 to 42.0 percent increase yield (3682 kg ha⁻¹) over the varieties (Co 7, WCC 75) and 15 per cent increase yield over hybrid check X7 in irrigated situations. Under rainfed conditions, the overall mean grain yield was 2819 kg ha⁻¹ which was 36.4 to 42.8 per cent increase yield over varieties (Co 7, WCC 75) and 21.7 per cent increase yield over hybrid check X7.

Table 1. Overall mean performance of pearl millet hybrid COHCu 8 (TNBH 5635)

Details	Number of trials		Yield (kg ha ⁻¹)			
			COHCu 8	X7	Co7	WCC 75
Station trials	8	Irrigated	4874	4145	3427	2986
	8	Rainfed	3994	3212	2709	2459
Multilocation trials	9	Rainfed	2453	2022	1793	1753
	Adaptive Research Trials	94	Irrigated	2491	2258	2311
228		Rainfed	1814	1715	1696	1708
All India trials	13	Rainfed	3014	-	-	-
	Mean yield	102	Irrigated	3682	3201	2869
258		Rainfed	2819	2316	2066	1973
% on respective check		Irrigated		115.0	128.3	142.0
		Rainfed		121.7	136.4	142.8

Table 2. Quality aspects of pearl millet hybrid COHCu 8

Characters	COHCu 8	X7	CO7
Colour and appearance	7.0	7.2	7.5
Flavour	7.5	7.8	8.0
Texture	7.6	8.0	8.2
Taste	8.0	8.2	8.5
Protein (%)	13.8	13.8	12.9
Endosperm (%)	90.5	90.0	91.5

The downy mildew reaction was tested under sickplot condition and it was found to be resistant by recording a score of one percent whereas the susceptible check BB 3 has recorded 25 percent. Sequential release of hybrids is a safe measure to tackle downy mildew. Hence, this hybrid can be recommended as an alternative to X7. Synchronised flowering was observed in both male and female parents. As abundant pollens are produced in male parent, the ratio of planting female and male rows in hybrid seed production can be altered as against 4:2. This hybrid is early maturing 80 - 85 days with synchronised flowering and produces 5-8 productive tillers and mean 1000 grain weight was 8.5 - 9.5 g. The size of the grain is medium and color amber in nature. The protein content is about 13.8 per cent with acceptable cooking quality and suited for consumption (Table 2). Being early maturing, high yielding hybrid and suitable for irrigated and rainfed situations it

was released as COHCu 8 during January 2001 as a pongal gift to the farmers of Tamil Nadu for general cultivation.

Acknowledgements

The staff of the departments of Pathology, Entomology, Biochemistry and Food Technology are earnestly acknowledged for the help rendered.

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(Received : April 2001; Revised : October 2001).